



SPECIFICATION



HSD104JPW1-B10

10.4" - 900 x 1280 - LVDS

Version: 1.0

Date: 11.01.2024

Note: This specification is subject to change without prior notice

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TO : DATA MODUL

Date : Jan.11.2024

HannStar Product Information (Tentative)

Model: HSD104JPW1-B10

Note:

- (1) The information contained herein is tentative and may be changed without prior notices
- (2) Please contact HannStar Display Corp. before designing your product based on this module specification.
- (3) The information contained herein is presented merely to indicate the characteristics and performance of our products. No responsibility is assumed by HannStar for any intellectual property claims or other problems that may result from application based on the module described herein.
- (4) The mark “**” of Model means sub-model code.
- (5) This specification contains bracketed details (number), which are tentative specifications. If there is any change, the specifications will be updated in the next stage.

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Record of Revisions

Rev.	Date	Sub-Model	Description of change
1.0	Jan.11.2024	-B10	Tentative Product Information was first released.

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1.0 GENERAL DESCRIPTION

1.1 Introduction

HannStar Display model HSD104JPW1-B10 is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) that uses amorphous silicon TFT as a switching device. This model is composed of a TFT LCD panel, a driving circuit and a back light system. This TFT LCD has a 10.4" inch diagonally measured active display area with 2880 x 1280 dot (960 horizontal by 1280 vertical pixel) resolution.

1.2 Features

- 10.4 (3:4 diagonal) inch configuration
- 16.7M
- ROHS / Halogen Free Compliance

1.3 Applications

- TFT LCD Monitor
- Industrial Application
- Amusement
- Vehicle

1.4 General information

Item		Specification	Unit
Module size		172.4(H) x 227.9(V) x7.69(Typ.)	mm
Display area		158.4(H) x 211.2(V)	mm
Number of Pixel		960 RGB (H) x 1280(V)	pixels
Pixel pitch		0.165(H) x 0.165(V)	mm
Pixel arrangement		RGB Vertical stripe	
Display mode		Normally Black	
NTSC		70 (typ.)	%
Back-light		Single LED (Side-Light type)	
Power Consumption	Logic System	(1.046) W (Max.) (White Pattern)	W
	B/L System	9.69 W (Max.)	W
Surface Treatment		Clear type (HC)	
Weight		(414)	g

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2.0 ABSOLUTE MAXIMUM RATINGS

2.1 Electrical Absolute Rating

2.1.1 TFT LCD Module

Parameters	Symbol	Min.	Max.	Unit	Note
Power Supply voltage	VDD	-0.3	5	V	
	VDDP	-0.3	7.7	V	
	VDDN	-7.7	0.3	V	
	VGH	-0.3	VGL+42	V	
	VGL	-25	0.3	V	

2.2 Environment Absolute Rating

Item	Symbol	Min.	Max.	Unit	Note
Operating Temperature	T _{opa}	-30	85	°C	
Storage Temperature	T _{stg}	-40	90	°C	

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3.0 OPTICAL CHARACTERISTICS

3.1 Optical specification

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Contrast		CR	$\Theta=0$ Normal viewing angle	1100	(1500)	—		(1)(2)
Response time	25°C	TR+TF		—	—	30	msec	(1)(3)
	-20°C			—	—	(200)		
	-30°C			—	—	(400)		
White luminance (Center)		Y_L		800	1000	—	cd/m ²	(1)(4) ($I_L=285mA$)
Color chromaticity (CIE1931)	White	W_x	$\Theta=0$ Normal viewing angle	-0.04	(0.307)	+0.04		(1)(4)
		W_y			(0.327)			
	Red	R_x			(0.644)			
		R_y			(0.345)			
	Green	G_x			(0.321)			
		G_y			(0.627)			
	Blue	B_x			(0.148)			
		B_y			(0.092)			
Viewing angle	Hor.	Θ_L	CR>10	80	85	—		
		Θ_R		80	85	—		
	Ver.	Θ_U		80	85	—		
		Θ_D		80	85	—		
Brightness uniformity		B_{UNI}	$\Theta=0$	70	80	—	%	(5)
Reflection		R (%)	—	—	(5.0)	(5.5)	%	(7)
Gamma		--	—	2.2	2.5	2.8	--	
Optima View Direction		Free						(6)

3.2 Measuring Condition

- Measuring surrounding : dark room
- LED current I_L : 285mA
- Ambient temperature : 25±2°C
- 15min. warm-up time.

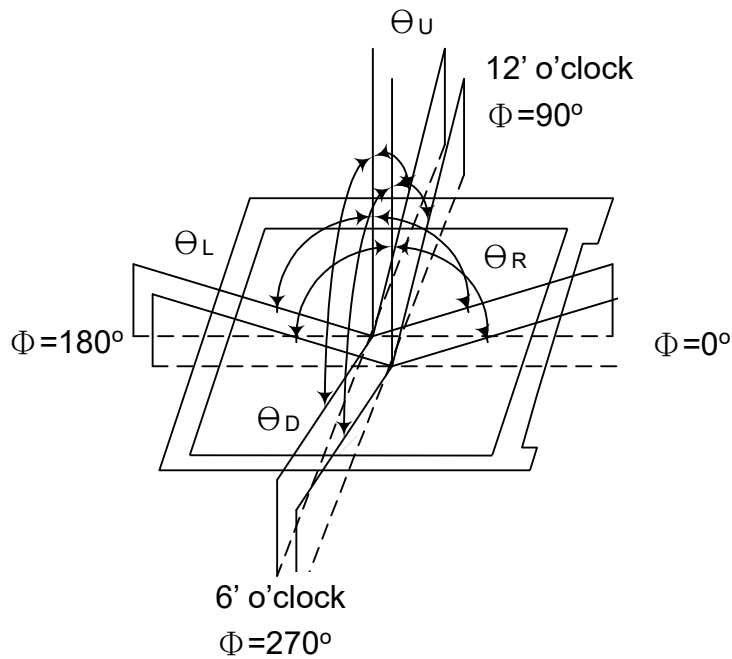
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3.3 Measuring Equipment

- FPM520 of Westar Display technologies, INC., which utilized SR-3 for Chromaticity and BM-5A for other optical characteristics.

- Measuring spot size : 20 ~ 21 mm

Note (1) Definition of Viewing Angle:

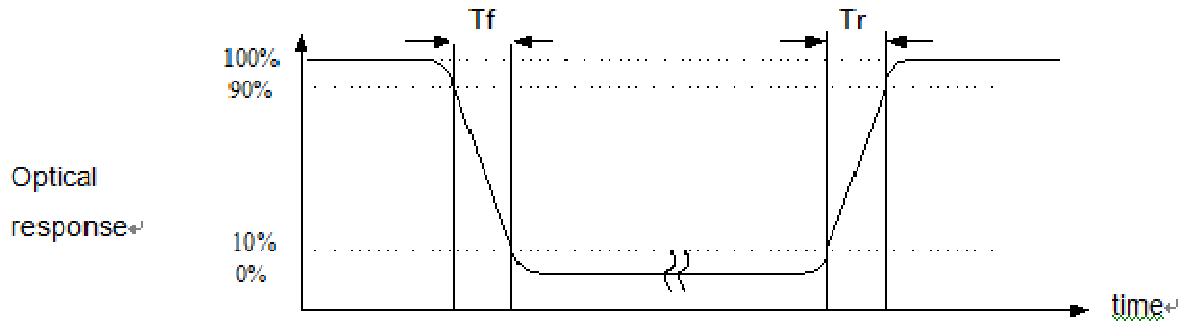


Note (2) Definition of Contrast Ratio (CR) :
measured at the center point of panel

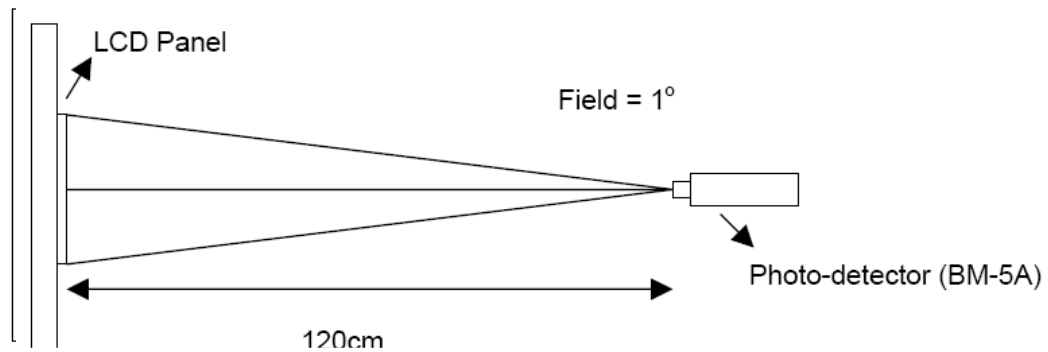
$$CR = \frac{\text{Luminance with all pixels white}}{\text{Luminance with all pixels black}}$$

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Note (3) Definition of Response Time : Sum of T_R and T_F

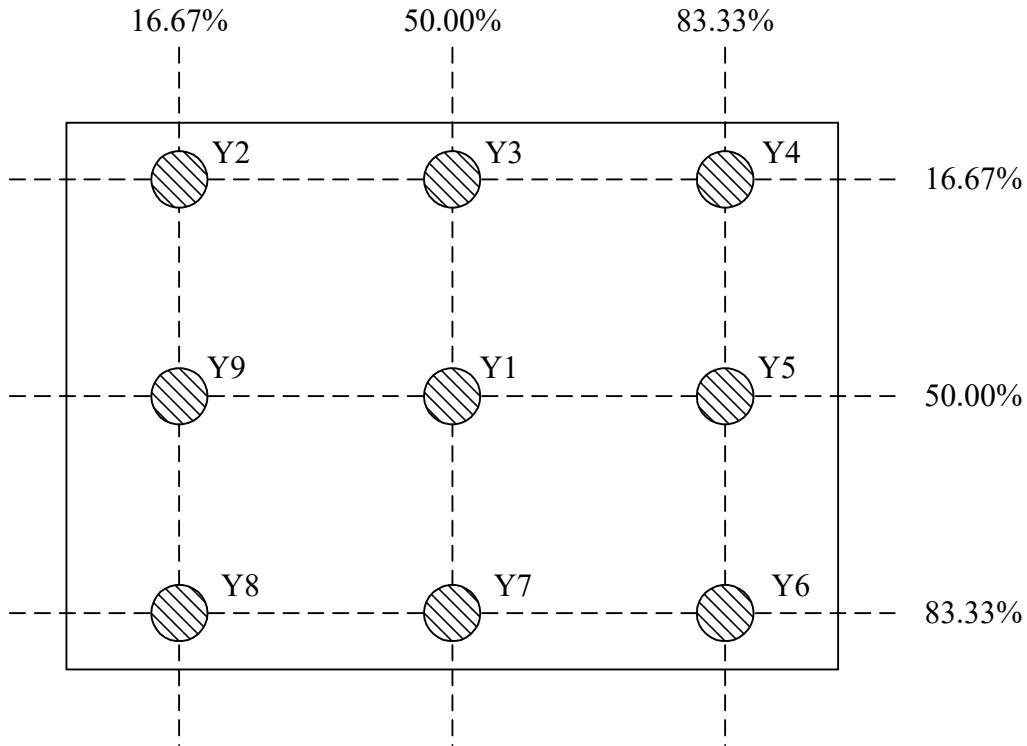


Note (4) Definition of optical measurement setup



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Note (5) Definition of brightness uniformity



$$\text{Luminance uniformity} = \frac{(\text{Min Luminance of 9 points})}{(\text{Max Luminance of 9 points})} \times 100\%$$

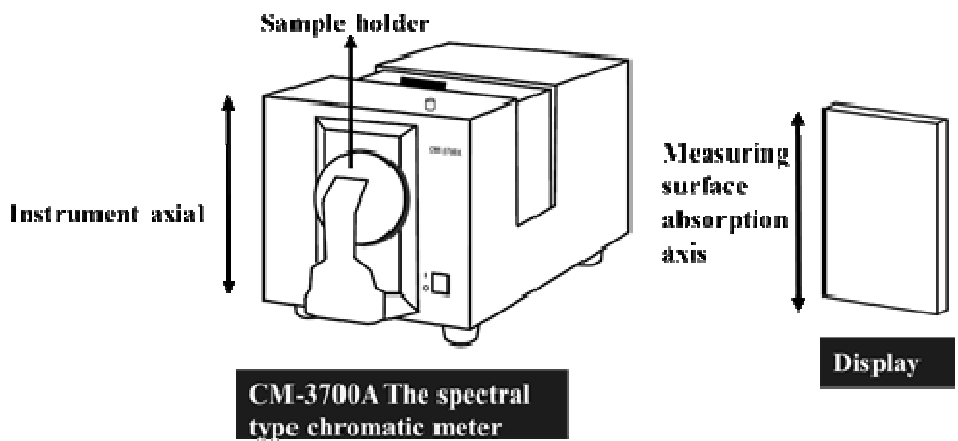
Note (6) : Rubbing Direction (The different Rubbing Direction will cause the different optima view direction).

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Note (7) Definition of CM-3700A(Konica Minolta) Measurement specification

- The Settings of the instrument :
 - A. reflection rate;
 - B. Measuring the aperture: MAV(8mm);
 - C. Observer perspective: 2°;
 - D. Specular light: SCI;
 - E. The light source: D65.

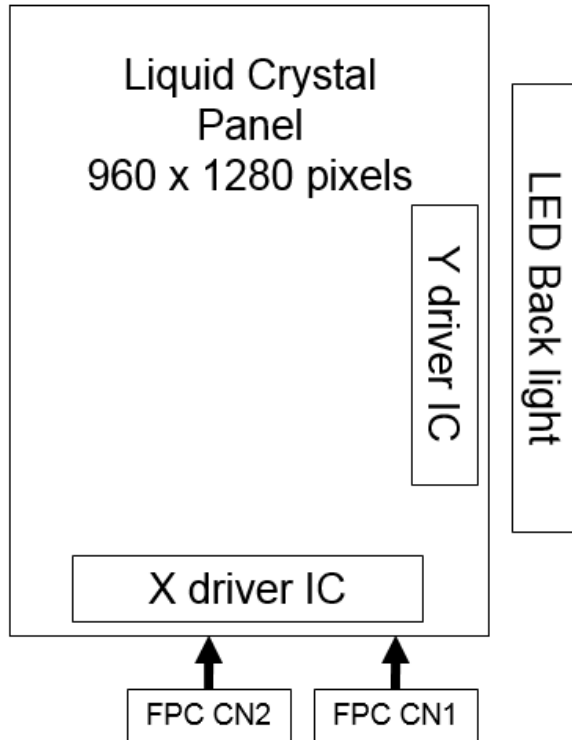
- The definition of measurement way
 Chromatic meter will display the absorption of shaft and spectral type axial parallel alignment, and placed the sample frame for photometry.



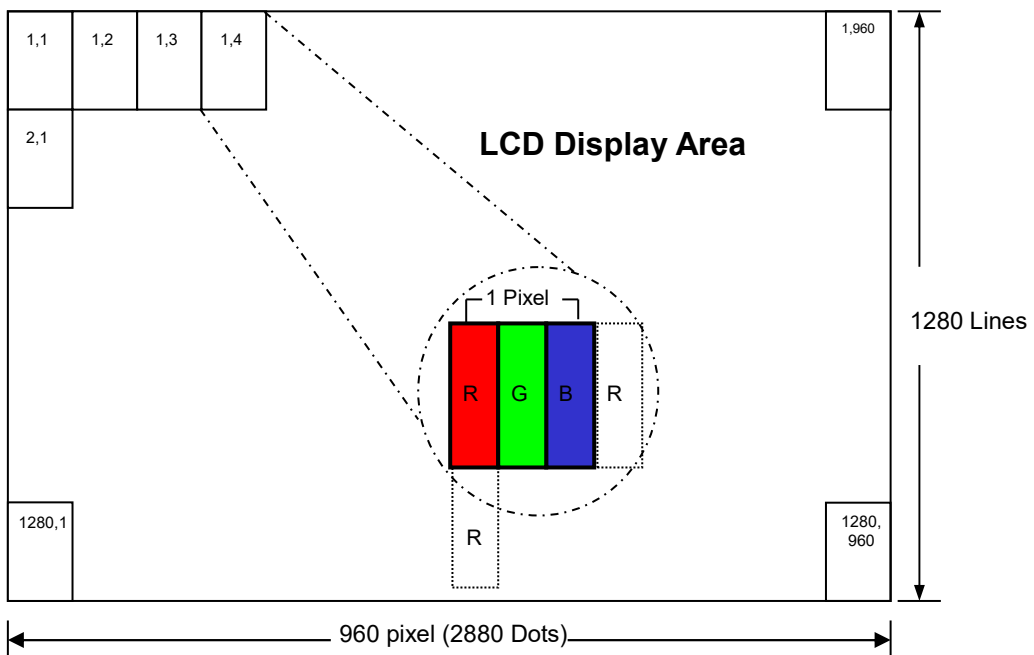
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4.0 BLOCK DIAGRAM

4.1 TFT LCD Module:



4.2 Pixel Format



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4.3 Relationship Between Displayed Color and Input

	Display	MSB				LSB				MSB				LSB				Gray scale Level								
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0		B7	B6	B5	B4	B3	B2	B1	B0
Basic color	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	-
	Blue	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	-
	Green	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	-
	Light Blue	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	-
	Red	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	-
	Purple	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	-
	Yellow	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	-
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	-
Gray scale of Red	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L1
		L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L2
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251
	Light	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L252
		H	H	H	H	H	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L253
		H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L254
Red	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	Red L255	
Gray scale of Green	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L1
		L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L2	
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251
	Light	L	L	L	L	L	L	L	L	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L252	
		L	L	L	L	L	L	L	L	H	H	H	H	H	L	H	L	L	L	L	L	L	L	L	L253	
		L	L	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L254	
Green	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	L	L	L	L	L	L	L	L	Green L255		
Gray scale of Blue	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L1
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L	L2	
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251
	Light	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L	L	L252	
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L	H	L253	
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	L	L254	
Blue	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	Blue L255		
Gray scale of White & Black	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L0
	Dark	L	L	L	L	L	L	L	H	L	L	L	L	L	L	H	L	L	L	L	L	L	L	H	L1	
		L	L	L	L	L	L	H	L	L	L	L	L	L	H	L	L	L	L	L	L	L	H	L	L2	
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	L3...L251
	Light	H	H	H	H	H	H	L	L	H	H	H	H	H	L	L	H	H	H	H	H	L	L	L252		
		H	H	H	H	H	H	L	H	H	H	H	H	H	L	H	H	H	H	H	H	L	H	L253		
		H	H	H	H	H	H	H	L	H	H	H	H	H	H	L	H	H	H	H	H	H	L	L254		
White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	White L255		

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5.0 INTERFACE PIN CONNECTION

CN1 FPC connector is used for electronics interface.

101072-206060 (BJD), 60PIN

Pin NO.	Symbol	I/O	Description	Remark
1	NC	N	None connect ,Floating, OTP voltage function	for HSD
2	NC	N	None connect ,Floating, Output V-SYNC signal for touch	for HSD
3	GND	P	Ground	
4	NC	N	Not Connect	
5	VDDP	P	Power input for source driver and power circuits(Typ. 6V)	
6	VDDP	P	Power input for source driver and power circuits(Typ. 6V)	
7	NC	N	Not Connect	
8	VDDN	P	Power input for source driver and power circuits(Typ. -6V)	
9	VDDN	P	Power input for source driver and power circuits(Typ. -6V)	
10	NC	N	Not Connect	
11	VDD	P	Digital power (Typ. 3.3V)	
12	VDD	P	Digital power (Typ. 3.3V)	
13	NC	N	Not Connect	
14	GND	P	Ground	
15	GND	P	Ground	
16	GND	P	Ground , (HSD function)	for HSD
17	GND	P	Ground	
18	PIND3	I	Positive LVDS differential data input	
19	NIND3	I	Negative LVDS differential data input	
20	GND	P	Ground	
21	PINC	I	Positive LVDS differential clock input	
22	NINC	I	Negative LVDS differential clock input	
23	GND	P	Ground	
24	PIND2	I	Positive LVDS differential data input	
25	NIND2	I	Negative LVDS differential data input	
26	GND	P	Ground	
27	PIND1	I	Positive LVDS differential data input	
28	NIND1	I	Negative LVDS differential data input	
29	GND	P	Ground	

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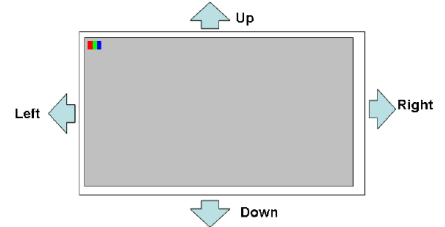
Pin NO.	Symbol	I/O	Description	Note
30	PIND0	I	Positive LVDS differential data input	
31	NIND0	I	Negative LVDS differential data input	
32	GND	P	Ground	
33	GND	P	Ground	
34	RESETB	I	Global reset pin. Active low to enter reset state. Suggest to connecting with an RC reset circuit for stability. Normally pull high. (R=10KΩ , C=0.1μF)	
35	STBYB	I	Standby mode setting pin. active low. Timing controller, output buffer, DAC and power circuit all of when STBYB is low. Suggest to connecting with an RC reset circuit for stability. Normally pull high. (R=10KΩ , C=1μF)	
36	RL	I	Left or right display control	Note 1
37	VDD	P	Digital power (Typ. 3.3V)	
38	TB	I	Up / down display control	Note 1
39	NC	N	None connect ,Floating, SDA /SPI Data pin	for HSD
40	NC	N	None connect ,Floating, SCL /SPI Clock pin	for HSD
41	NC	N	None connect ,Floating, CS /SPI chip select pin	for HSD
42	GND	P	Ground	
43	NC	N	Not Connect	
44	VDDP	P	Power input for source driver and power circuits(Typ. 6V)	
45	VDDP	P	Power input for source driver and power circuits(Typ. 6V)	
46	NC	N	Not Connect	
47	VDDN	P	Power input for source driver and power circuits(Typ. -6V)	
48	VDDN	P	Power input for source driver and power circuits(Typ. -6V)	
49	NC	N	Not Connect	
50	GND	P	Ground	
51	GND	P	Ground	
52	GND	P	Ground	
53	NC	N	Not Connect	
54	VDD	P	Digital power (Typ. 3.3V)	
55	NC	N	Not Connect	
56	VGH	P	Positive power for TFT (Typ. 20V)	
57	GND	P	Ground	
58	VGL	P	Negative power for TFT (Typ. -10V)	
59	NC	N	Not Connect	
60	GND	P	Ground	

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Note 1 : UPDN and SHLR control function

SHLR	UPDN	Data shifting
DVDD	GND	Left→Right ; Down→Up
GND	GND	Right→Left ; Down→Up
DVDD	DVDD	Left→Right ; Up→Down(default)
GND	DVDD	Right→Left ; Up→Down



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CN2 101072-201060 (BJD) 10PIN

Pin NO.	Symbol	I/O	Description
1	A	P	Anode
2	A	P	Anode
3	A	P	Anode
4	Dummy		NC
5	K1	P	Cathode 1
6	K2	P	Cathode 2
7	K3	P	Cathode 3
8	Dummy		NC
9	NTC_A	C	NTC_Anode
10	NTC_K	C	NTC_Cathode

Remark: For I/O, “I” is Input, “O” is Output. “P” is for Power , and “C” is for passive.

Note: NTC : Murata NCP18XH103F0SRB Temperature vs Resistance Table :

TEMP. (deg. C)	R-low (k ohm)	R-center (k ohm)	R-high (k ohm)
-40	188.0202	195.6520	203.5731
-35	142.7877	148.1710	153.7418
-30	109.5221	113.3471	117.2940
-25	84.8227	87.5588	90.3741
-20	66.2694	68.2367	70.2554
-15	52.2283	53.6496	55.1040
-10	41.4765	42.5062	43.5570
-5	33.1462	33.8922	34.6515
0	26.6780	27.2186	27.7675
5	21.6294	22.0211	22.4175
10	17.6430	17.9255	18.2107
15	14.4712	14.6735	14.8772
20	11.9371	12.0805	12.2244
25	9.9000	10.0000	10.1000
30	8.2162	8.3145	8.4132
35	6.8534	6.9479	7.0430
40	5.7443	5.8336	5.9238
45	4.8333	4.9169	5.0015
50	4.0833	4.1609	4.2395
55	3.4634	3.5350	3.6076
60	2.9486	3.0143	3.0812
65	2.5259	2.5861	2.6476
70	2.1724	2.2275	2.2839
75	1.8741	1.9245	1.9761
80	1.6225	1.6685	1.7157
85	1.4101	1.4521	1.4952

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6.0 ELECTRICAL CHARACTERISTICS

6.1 TFT LCD Module

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	VDD	3.0	3.3	3.6	V	
	VGH	19	20	21	V	Note (1)
	VGL	-9.5	-10	-10.5	V	Note (2)
	VDDP	5.8	6	6.2	V	
	VDDN	-6.2	-6	-5.8	V	
Input signal voltage	ViH	0.7*VDD	-	VDD+0.3	V	Note (3)
	ViL	GND	-	0.3*VDD	V	
Current of power supply	IDD	-	22.7	-	mA	VDD = 3.3V
	IDDP		59.3	-	mA	VDDN= 6V
	IDDN	-	68.8	-	mA	VDDN= -6V
	IGH	-	0.5	-	mA	VGH= 20V
	IGL	-	0.7	-	mA	VGL= -10V

Note :

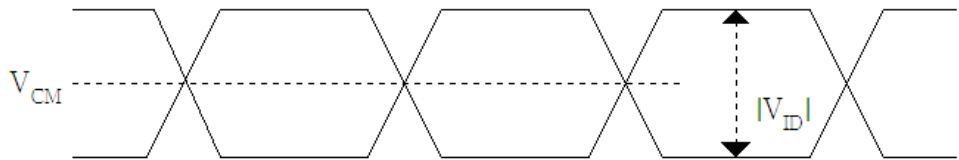
- (1) : VGH is TFT Gate operating Voltage.
- (2) : VGL is TFT Gate operating Voltage.
- (3) : BIST、RL、TB、GRB、STBYB
- (4) : @ White Pattern & 60Hz。

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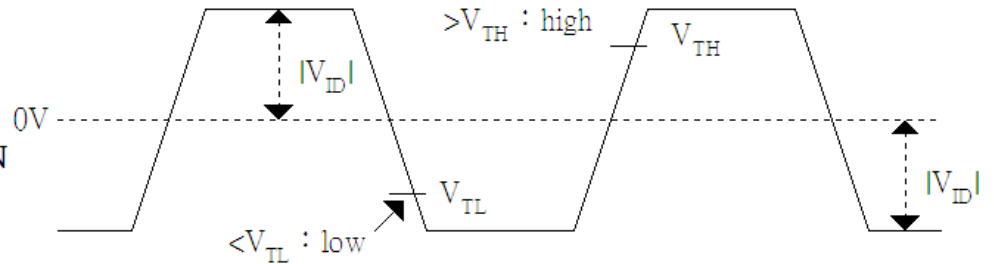
6.2 Switching Characteristics for LVDS Receiver

Item	Symbol	Min.	Typ.	Max.	Unit	Conditions
Differential Input High Threshold	V_{th}	100	—	—	mV	$V_{CM}=1.2V$
Differential Input Low Threshold	V_{tl}	—	—	-100	mV	
Common Mode Voltage Offset	V_{CM}	1	1.2	$1.7-(V_{ID} /2)$	V	
LVDS input Voltage	V_{INLV}	0.7	—	1.7	V	
Differential input Voltage	$ V_{ID} $	0.1	—	0.6	V	
Differential Input leakage current	I_{LEAK}	-10	—	+10	μA	

Single-ended :
 LVCLKP,
 LVCLKN,
 LVD[3:0]P,
 LVD[3:0]N



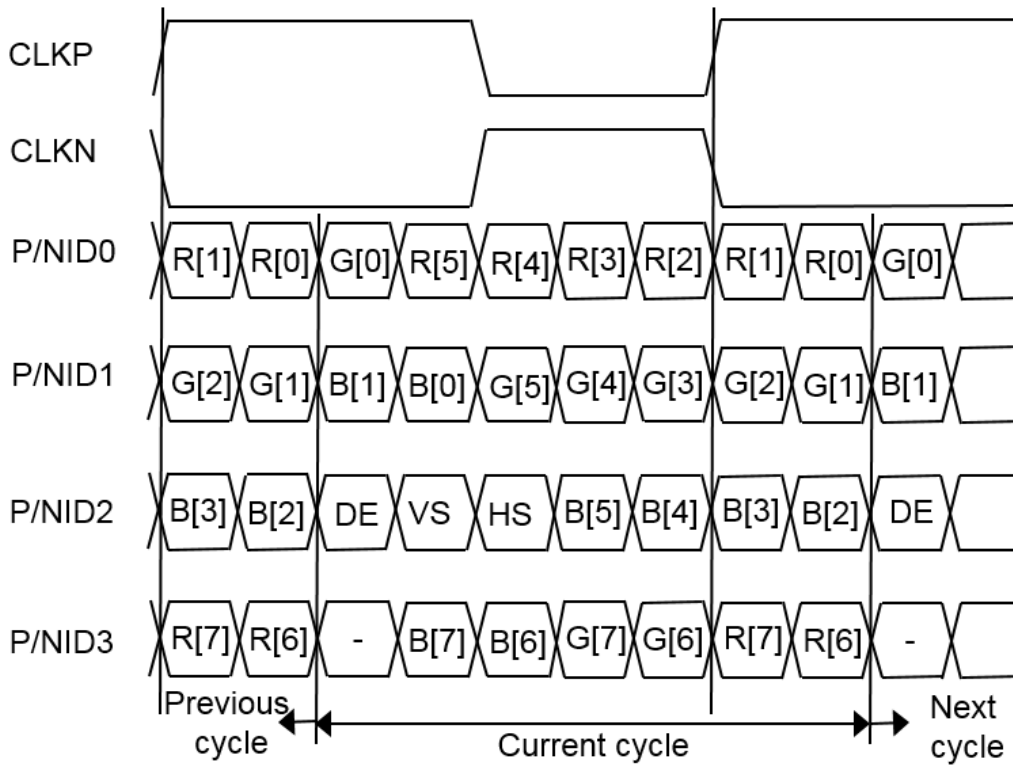
Differential :
 LVCLKP-LVCLKN,
 LVD[3:0]P-LVD[3:0]N



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6.3 Bit LVDS input

6.3.1 8Bit LVDS input (VESA Format DE mode)



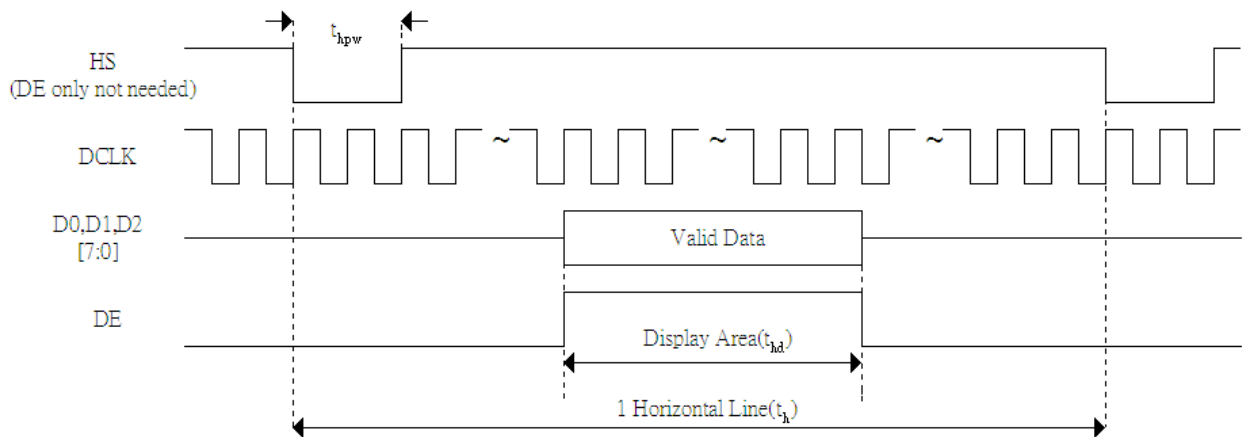
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6.4 Interface Timing (DE mode)

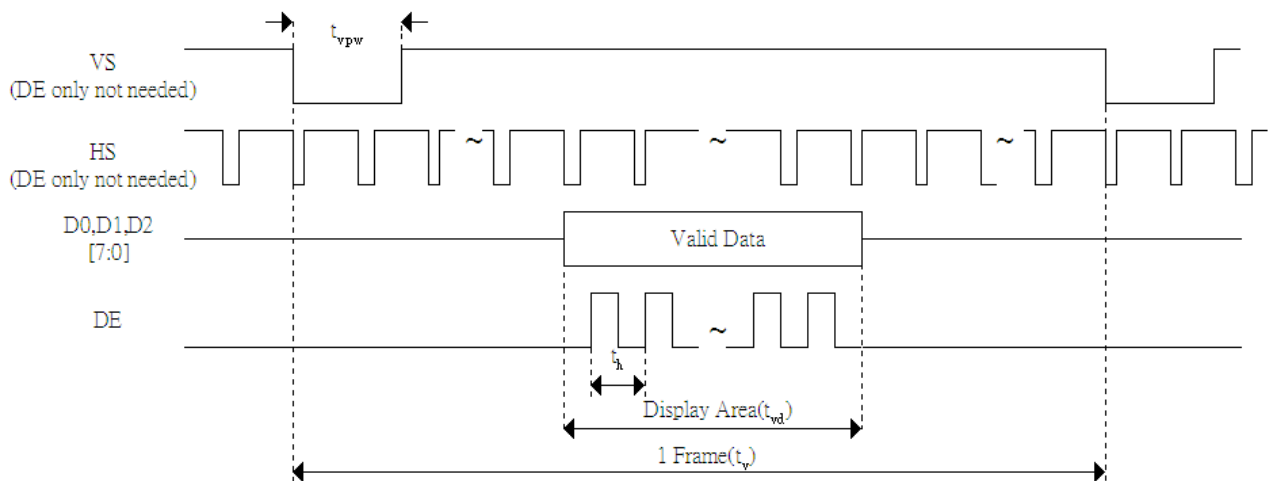
Item	Symbol	Min.	Typ.	Max.	Unit
Frame Rate	--	--	60	--	Hz
Vertical Total Time	TV	1300	1320	1340	line
Vertical Display Time	TVD	1280			line
Vertical Blanking Time	TVB	20	40	100	line
Horizontal Total Time	TH	1010	1020	1030	clock
Horizontal Display Time	THD	960			clock
Horizontal Blanking Time	THB	50	60	70	clock
Clock Rate	1/ TClock	78.8	80.8	82.8	MHz

6.4.1 Timing Diagram of Interface Signal (DE mode)

Horizontal



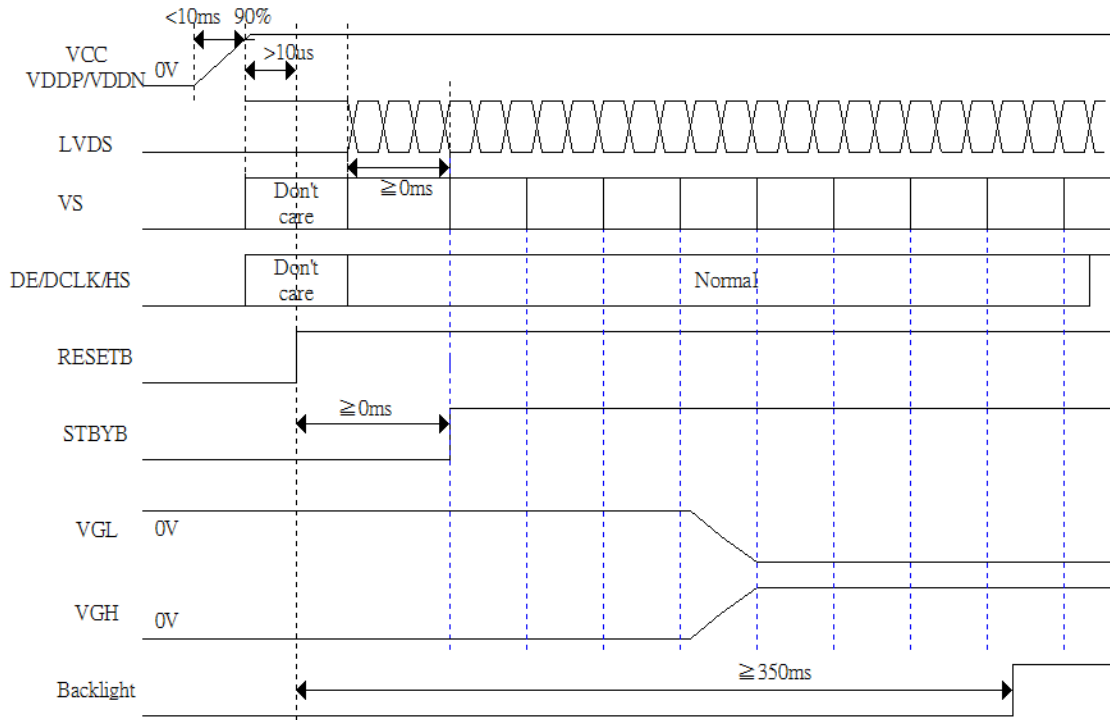
Vertical



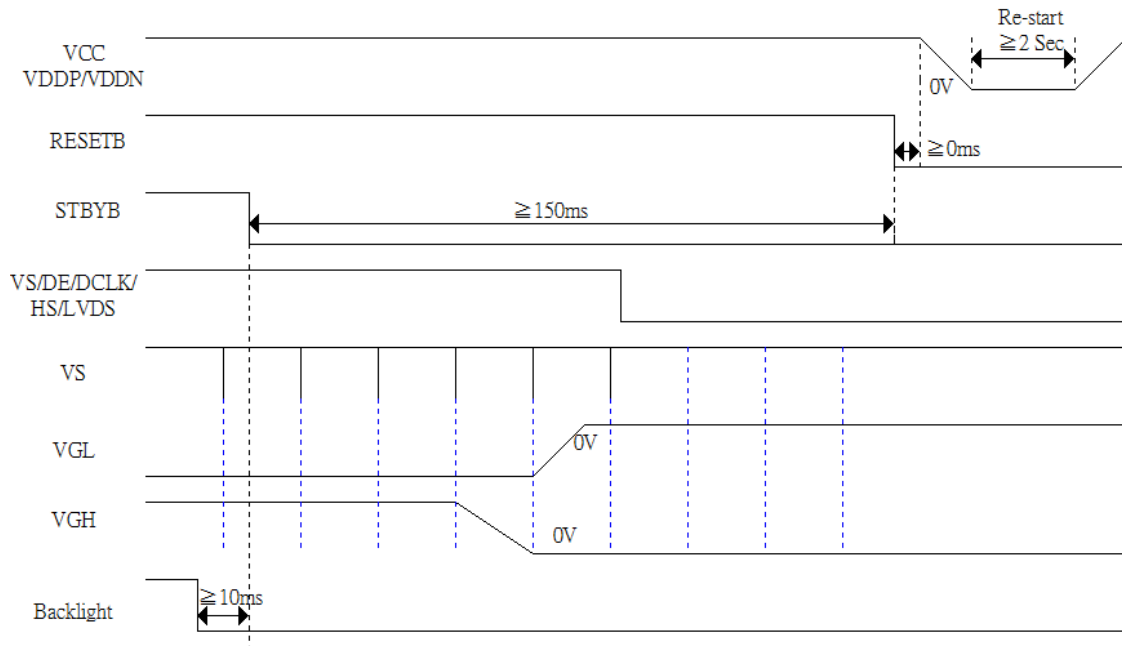
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6.5 Power On / Off Sequence

Power ON



Power OFF



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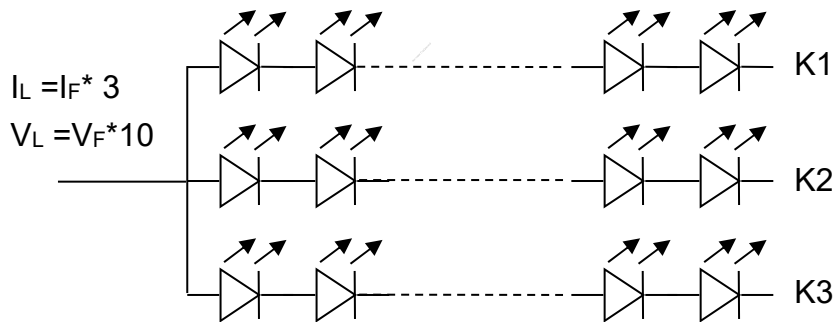
6.6 Backlight Unit

Parameter	Symbol	Min	Typ	Max	Units	Condition
LED Current	I_L	--	285	--	mA	$T_a=25^\circ\text{C}$
LED Voltage	V_L	--	30.2	34	Volt	$T_a=25^\circ\text{C}$
LED Life-Time	N/A	30,000	--	--	Hour	$T_a=25^\circ\text{C}$ $I_F=75\text{mA}$ Note (2)

Note (1) LED life time (Hr) can be defined as the time in which it continues to operate under the condition: $T_a=25\pm 3^\circ\text{C}$, typical I_L value indicated in the above table until the brightness becomes less than 50%.

Note (2) The "LED life time" is defined as the module brightness decrease to 50% original brightness at $T_a=25^\circ\text{C}$ and $I_L=285\text{ mA}$. The LED lifetime could be decreased if operating I_L is larger than 285 mA. The constant current driving method is suggested.

Note (3) LED Light Bar Circuit 10S3P =30pcs LED, $I_L =I_F* 3$, $V_L =V_F*10$



LED temperature current curve : TBD

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7.0 RELIABILITY TEST ITEMS

No.	Item	Conditions	Remark
1	High Temperature Storage	Ta=+90°C, 504hrs	1, 2, 3
2	Low Temperature Storage	Ta=-40°C, 504hrs	1, 2, 3
3	High Temperature Operation	Ta=+85°C, 504hrs	1, 2, 3
4	Low Temperature Operation	Ta=-30°C, 504hrs	1, 2, 3
5	High Temperature and High Humidity (operation)	Ta=+60°C, 90%RH, 504hrs	1, 2, 3
6	Thermal Cycling Test (non operation)	-30°C(30min)→+85°C(30min),300 cycles	1, 2, 3
7	Electrostatic Discharge	Contact = ± 8 kV, class B; (R=330Ω,C=150pF) ; Air = ± 15 kV, class B (R=330Ω,C=150pF) ; 1 time for each point.	
8	Vibration	1.Random: 1.04G, 10~500Hz, XYZ, 30min/each direction 2.Sine: Freq. Range: 8~33.3Hz, Stoke: 1.3mm Sweep: 2.9G, 33.3~400 X/Z: 2hrs, Y:4hrs	
9	Shock	Half-Sine, 100G, 6ms, ±XYZ, 1time	
10	Vibration (with carton)	Random: 0.015G ² /Hz, 5~200Hz -6dB/Octave, 200~400Hz XYZ 2hrs/each direction	
11	Drop (with carton)	Drop height condition, basis on the product weight and Follow QB200-0015 1 corner, 3 edges, 6 surfaces-	

Note1 : There is no display function NG issue occurred, all the cosmetic specification is judged before the reliability stress.

Note2: The test result shall be evaluated after the sample has been left at room temperature and humidity for 2 hours without load. No condensation shall be accepted. The sample shall be free from defects:

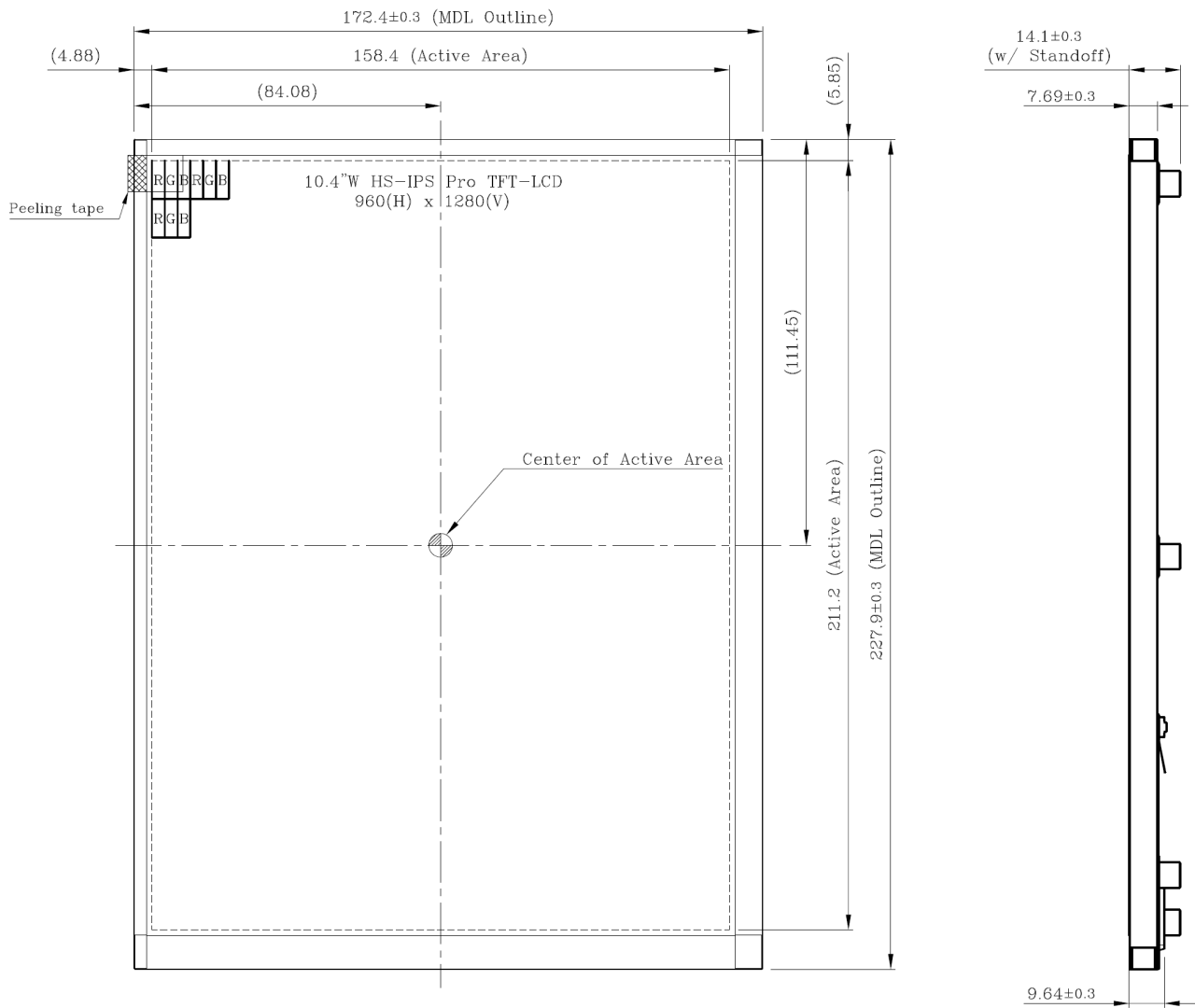
(Air bubble in the LCD 、 Seal leak 、 Non-display 、 Missing segments 、 Glass crack).

Note3 : The test condition definition panel's surface temperature.

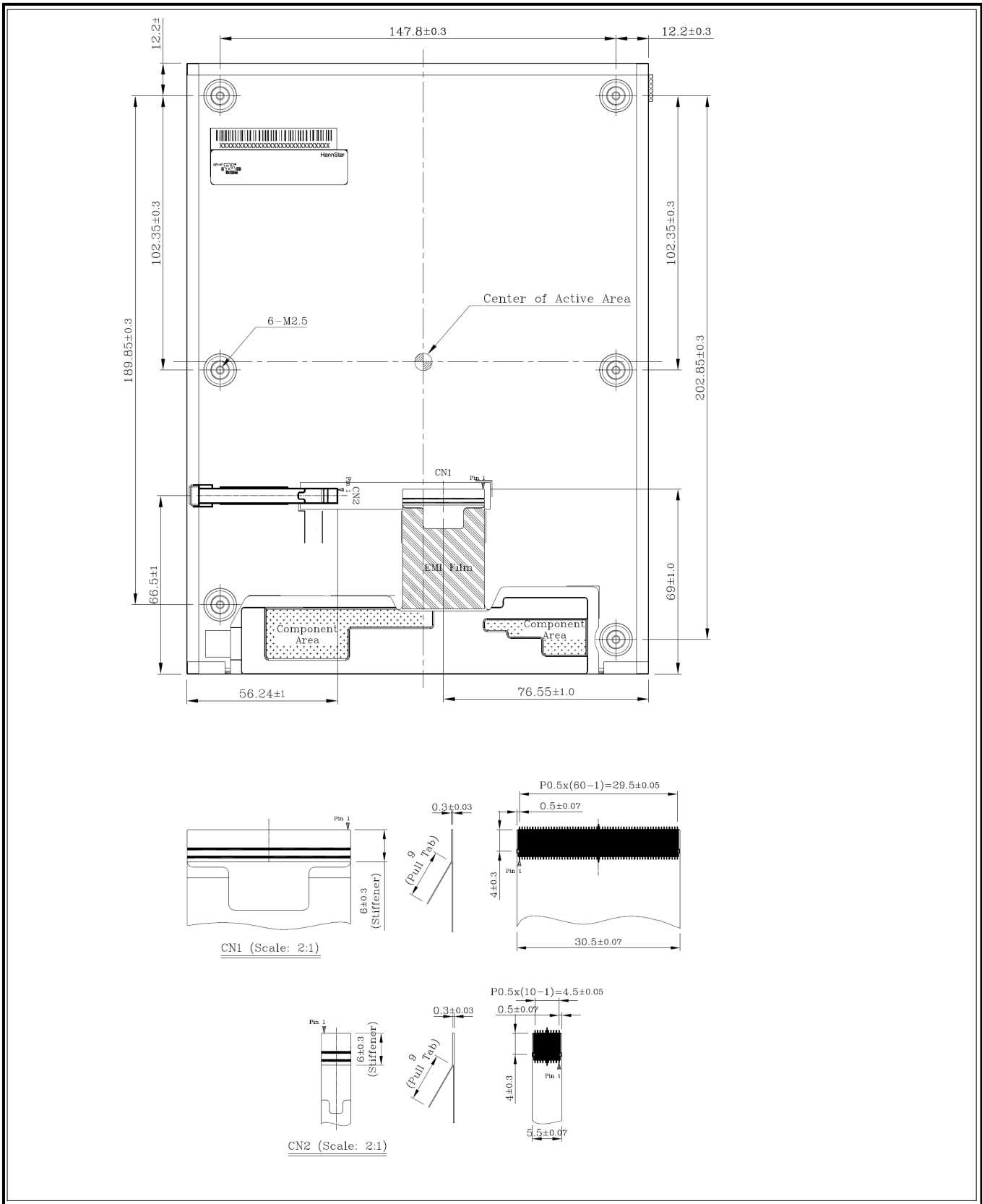
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8.0 OUTLINE DIMENSION

Unit : mm



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9.0 LOT MARK

9.1 Lot Mark

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----

Code 1,2,3,4,5,6: HannStar internal flow control code.

Code 7: production location.

Code 8: production year.

Code 9: production month.

Code 10,11,12,13,14,15: serial number.

Note (1) Production Year: Code 8 is defined by the last number of the year, for example

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Mark	9	0	1	2	3	4	5	6	7	8

Note (2) Production Month

Month	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct	Nov.	Dec.
Mark	1	2	3	4	5	6	7	8	9	A	B	C

9.2 Detail of Lot Mark

- (1) Below label is attached on the backside of the LCD module. See Section 8.0: Outline Dimension.
- (2) The detail of Lot Mark is attached as below.
- (3) This is subject to change without prior notice.



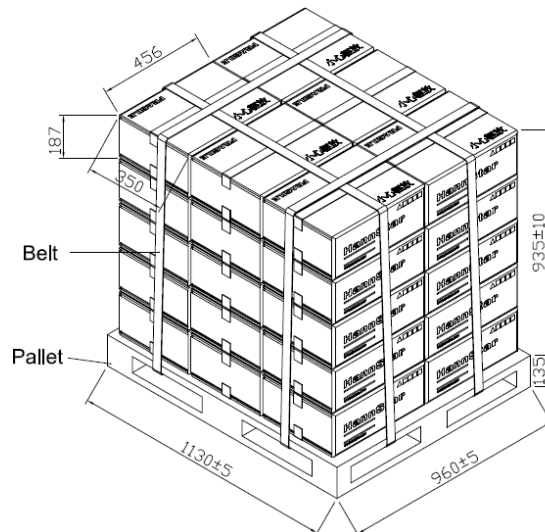
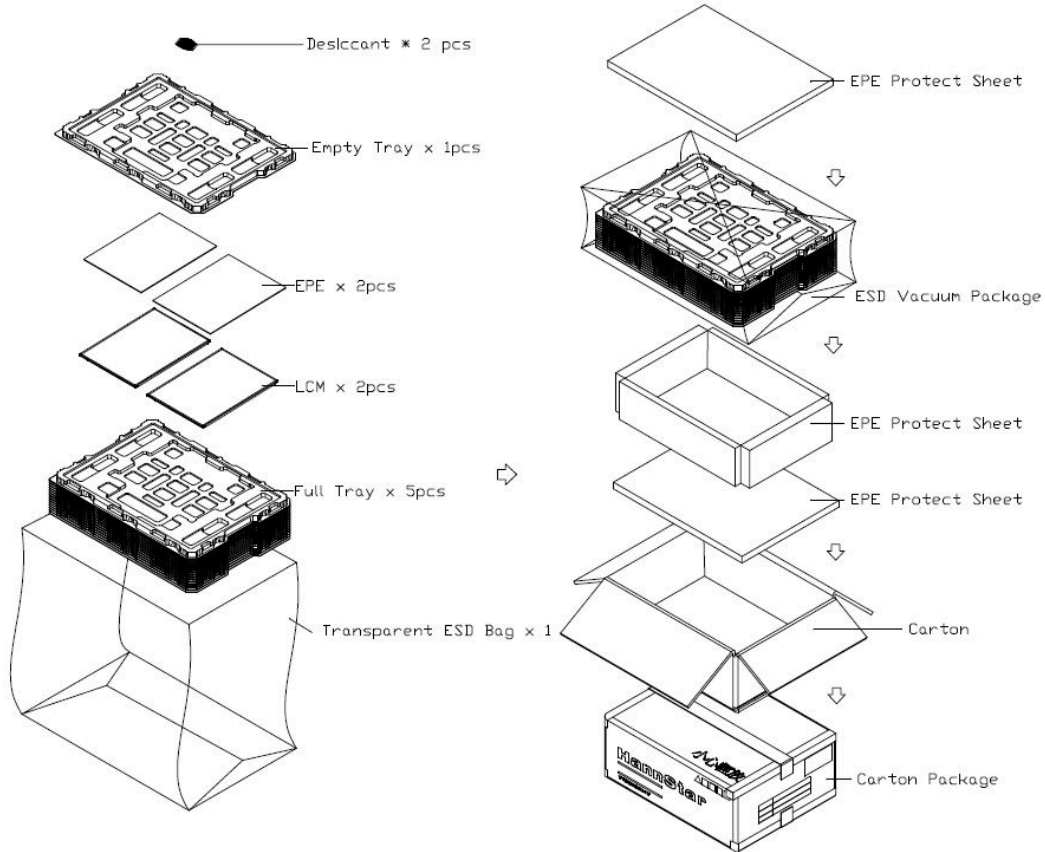
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10.0 PACKAGE SPECIFICATION

10.1 Packing form

LCM Model	Qty. in the Box	Inner Box Size(mm)	Notice
HSD104JPW1-B10	10 pcs/Box	Ref. 456 x 350 x 187 ^H	--

10.2 Packing assembly drawings



Notes :
 1 Tray : 2 pcs MOD
 1 Carton : 10 pcs MOD
 1 Pallet : 30 pcs Cartons

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11.0 GENERAL PRECAUTION

11.1 Use Restriction

This product is not authorized for use in life supporting systems, aircraft navigation control systems, military systems and any other application where performance failure could be life-threatening or otherwise catastrophic.

11.2 Disassembling or Modification

Do not disassemble or modify the module. It may damage sensitive parts inside LCD module, and may cause scratches or dust on the display. HannStar does not warrant the module, if customers disassemble or modify the module.

11.3 Breakage of LCD Panel

11.3.1. If LCD panel is broken and liquid crystal spills out, do not ingest or inhale liquid crystal, and do not contact liquid crystal with skin.

11.3.2. If liquid crystal contacts mouth or eyes, rinse out with water immediately.

11.3.3. If liquid crystal contacts skin or cloths, wash it off immediately with alcohol and rinse thoroughly with water.

11.3.4. Handle carefully with chips of glass that may cause injury, when the glass is broken.

11.4 Electric Shock

11.4.1. Disconnect power supply before handling LCD module.

11.4.2. Do not pull or fold the LED cable.

11.4.3. Do not touch the parts inside LCD modules and the fluorescent LED's connector or cables in order to prevent electric shock.

11.5 Absolute Maximum Ratings and Power Protection Circuit

11.5.1. Do not exceed the absolute maximum rating values, such as the supply voltage variation, input voltage variation, variation in parts' parameters, environmental temperature, etc., otherwise LCD module may be damaged.

11.5.2. Please do not leave LCD module in the environment of high humidity and high temperature for a long time.

11.5.3. It's recommended to employ protection circuit for power supply.

11.6 Operation

11.6.1 Do not touch, push or rub the polarizer with anything harder than HB pencil lead.

11.6.2 Use fingerstalls of soft gloves in order to keep clean display quality, when persons handle the LCD module for incoming inspection or assembly.

11.6.3 When the surface is dusty, please wipe gently with absorbent cotton or other soft material.

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11.6.4 Wipe off saliva or water drops as soon as possible. If saliva or water drops contact with polarizer for a long time, they may causes deformation or color fading.

11.6.5 When cleaning the adhesives, please use absorbent cotton wetted with a little petroleum benzine or other adequate solvent.

11.7 Mechanism

Please mount LCD module by using mounting holes arranged in four corners tightly.

11.8 Static Electricity

11.8.1 Protection film must remove very slowly from the surface of LCD module to prevent from electrostatic occurrence.

11.8.2 Because LCD module use CMOS-IC on circuit board and TFT-LCD panel, it is very weak to electrostatic discharge. Please be careful with electrostatic discharge. Persons who handle the module should be grounded through adequate methods.

11.9 Strong Light Exposure

The module shall not be exposed under strong light such as direct sunlight. Otherwise, display characteristics may be changed.

11.10 Disposal

When disposing LCD module, obey the local environmental regulations.



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